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REMARKS

Applicants respectfully submit that all the claims presently on file are in condition for allowance, which action is earnestly solicited. The claims on file have been amended to more clearly point out the present invention.

THE SPECIFICATION

Paragraph [0025] has been amended for added clarity of the present invention. No new matter has been introduced.

THE CLAIMS

ELECTION / RESTRICTIONS

Applicants confirm the election of the claims of Group I, namely claims 1 - 4, and reserve the right to file continuing applications to capture the subject matter of the non-elected subject matter.

CLAIMS REJECTION UNDER 35 U.S.C. 103

Claims 1-4 were rejected under 35 U.S.C. 103(a) as being unpatertable over Nelson (5,148,620), hereinafter referred to as "Nelson" in view of Callies (4,455,777), hereinafter referred to as "Callies", and further in view of Knode et al (3,339,304), hereinafter referred to as "Knode". Applicants respectfully traverse these rejections and submit that none of the cited references discloses the elements and features of the claims on file as a whole, whether considered individually or in combination with each other. To this end, Applicants respectfully submit the following arguments:

A. Legal Standards for Obviousness

The following legal authorities set the general legal standards in support of Applicants' position of non-obviousness, with emphasis added for added clarity:

- MPEP §2143.03, "All Claim Limitations Must Be Taught or Suggested: To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art**. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "**All words in a claim must be considered** in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

- MPEP §2143.01, "The Prior Art Must Suggest The Desirability Of The Claimed Invention: There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (**The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.**). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 308, 50 USPQ2d 1161 (Fed. Cir. 1999).

- "**Obviousness cannot be established** by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion** supporting the combination." *In re Fine, 837 F.2d at 1075, 5 USPQ2d at 1598* (citing *ACS Hosp. Sys. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)*). **What a reference teaches** and whether it teaches toward or **away from the claimed invention** are questions of fact. See *Raytheon Co. v. Roper Corp., 724 F.2d 951, 960-61, 220 USPQ 592, 599-600 (Fed. Cir. 1983)*, cert. denied, *469 U.S. 835, 83 L. Ed. 2d 69, 105 S. Ct. 127 (1984)*. "

- "When a rejection depends on a combination of prior art references, there must be **some teaching, suggestion, or motivation** to combine

the references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)." Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation** to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See MPEP 2143.01; In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 Fed. Cir. 1988); and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

- "With respect to core factual findings in a determination of patentability, however, the **Board cannot simply reach conclusions based on its own understanding or experience** -- or on its assessment of what would be basic knowledge or common sense. **Rather, the Board must point to some concrete evidence in the record** in support of these findings." See In re Zurko, 258 F.3d 1379 (Fed. Cir. 2001).

- "We have noted that **evidence of a suggestion, teaching, or motivation to combine** may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), Para-Ordinance Mfg. v. SGS Imports Intern., Inc., 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), although "the suggestion more often comes from the teachings of the pertinent references," Rouffet, 149 F.3d at 1355, 47 USPQ2d at 1456. The range of sources available, however, does not diminish the requirement for actual evidence. That is, **the showing must be clear and particular**. See, e.g., C.R. Bard, 157 F.3d at 1352, 48 USPQ2d at 1232. **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."** E.g., McElmurry v. Arkansas Power & Light Co., 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) ("Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact."); In re Sichert, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977)." See In re Dembiczak, 175 F. 3d 994 (Fed. Cir. 1999).

- "To prevent the use of hindsight based on the invention to defeat patentability of the invention, **this court requires the examiner to show a motivation to combine the references** that create the case of obviousness. In other words, **the examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and

with no knowledge of the claimed invention, would select the elements from the cited prior art references **for combination in the manner claimed**." See In re Rouffet, 149, F.3d 1350 (Fed. Cir. 1998).

- The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination**. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, **there must be a suggestion or motivation in the reference** to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

- If the **proposed modification would render the prior art invention being modified unsatisfactory** for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900; 221 USPQ 1125 (Fed. Cir. 1984).

B. Brief Summary of the Present Invention

Prior to presenting substantive arguments in favor of the allowability of the claims on file, it might be desirable to summarize the present invention in view of the problem it addresses.

To accomplish breaching of a door, a soldier may carry a separate special stand-alone shotgun. This shotgun would be carried by the soldier in addition to a standard issue weapon, usually a M16 Rifle or a M4 Carbine and thus is an added burden for the solider. Further, it will be appreciated that using a separate shotgun results in undesirable time periods when the soldier does not have a weapon, i.e., during the transition time taken in switching to use of the shotgun and the time taken

in switching back from use of the shotgun, and that the soldier is vulnerable during these times.

The present invention discloses a device that is provided for permitting the firing of standard, preferably 12-guage shot shells, using a grenade launcher, such as the M203 Grenade Launcher. The conversion of the grenade launcher so as to be able to serve this purpose is accomplished in one embodiment of the invention, by a complete replacement of the barrel of the grenade launcher and, in another embodiment, by using a barrel insert device which uses the receiver and firing controls of the standard grenade launcher.

An adapter device is provided for converting a grenade launcher into a weapon for firing shot shells. The adapter includes an elongate barrel member of a gauge for shot shell which is adapted to be received in, and extend through, the barrel of the host barrel assembly of the grenade launcher. A cap secures the barrel member in place in the host barrel assembly. A replacement barrel assembly for firing shot shells is also provided which includes a shell extractor for extracting shells from the replacement barrel.

The **present invention** discloses and illustrated in FIGS. 1 and 2 an adapter or insert device that generally includes **two components, a barrel insert** 20 which includes a 12 gauge barrel portion 22 and is breech inserted, which barrel 20 extends through and beyond both ends of the host barrel, **and a barrel cap** 24 which includes the **threading** indicated at 24a that is adapted to be threaded onto corresponding threading 20a on barrel insert 20. The barrel cap 24 includes a flange **and a hollow circumferential step** on one end to enable the cap to insert into the host

grenade launcher barrel 12 and secure the tapered distal end 28 of barrel insert 20 inside the host barrel.

The present invention further discloses a **shell extractor** 26 that is provided at the tapered distal end 28 of barrel insert 20. As shown in Figure 2, shell extractor 26 includes a shell extractor member 30 including a headed end 30a and a shaft portion 30b, **extractor coil spring 32 which fits around shaft portion 30b and engages headed end 30a, and a retaining pin 34.**

The barrel 22 in the two-component barrel insert is shown in FIGS. 1 and 2 to be a single barrel that extends through and beyond the barrel of the host grenade launcher barrel. It has a first advantage of securing the taper shaped end of the barrel 22 to the breech side of the host barrel, and a second advantage of providing sufficient room for the cap 24 that inserts in the frontal end of the muzzle.

The **circumferential step** 25 of the cap 24 provides **greater ease of operation and stability**, as the cap inserts into the host barrel at an approximate insertion depth instead of a precise position to complete the installation of the barrel insert 20. It provides greater ease of operation in the field as the soldier can more quickly proceed to firing shot shells. Another advantage is better aiming through greater stability on the barrel of the barrel insert. The cap secures the barrel of the barrel insert to the host barrel, maintaining **constraint at the muzzle end**, thereby providing **stable and accurate aim** as the shot is fired.

If the two component barrel insert assembly of barrel and cap is **slightly displaced** axially inside the host barrel, the **circumferential step continues**

to provide contact between the cap and the host barrel to keep the barrel insert inside the host barrel, maintaining a stable and accurate aim. Another advantage is that as the stress waves from the firing travel down the host barrel to the muzzle end, the waves move parallel to the barrel of the barrel insert and do not transmit to induce any loading on the threads between the cap and the barrel of the barrel insert, **improving reliability**.

In the shell extractor, the **extractor coil spring** provides spring bias such that shell extractor member 30 **only needs to be pulled** from the taper end of the barrel 22 to **extract a spent shell of any length** and automatically returns to the barrel 22 upon release. In addition the **compact retaining pin** 34 enables a quick assembly of the shell extractor member.

C. Application of the Obviousness Standard

Nelson generally discloses an adapter in FIGS. 1 and 2 that includes a **cylindrical main body which is inserted into the breech bore and a barrel which extends forwardly thereof into the gun barrel bore. The adapter barrel is releasably connected to the main body of the adapter by threads**, preferably with rectangular, non-stripping lands and grooves, or by a turn wing and slot arrangement. Preferably, the front portion of the main body bore is recessed so that when the barrel is in place in the main body the **bores of the main body and barrel abut each other and are concentric and of the same diameter.**

The Nelson adapter 10 includes an elongated cylindrical main body 12 of metal, ceramic, cermet, heavy duty plastic or the like durable material (FIG. 1) and a cylindrical extension barrel 14 of metal or the like. Main

body 12 has a cylindrical bore 16 along and concentric with the longitudinal axis thereof extending from rear end 18 of body 12 through rear portion 20 and on into front portion 22 thereof, exiting at front end 24 thereof.

However, Nelson does not teach a single barrel of a barrel insert that extends through and beyond both ends of the host barrel, and a cap that secures the barrel of the barrel insert to the host barrel. **Nelson teaches away from the present invention** by disclosing a smaller bore barrel with multiple segments that are **connected together by threads**, and the smaller bore barrel ends **unconstrained** at and **abut** of the muzzle end. The smaller bore barrel aiming is determined entirely by the other end which is inserted into the breech of the host barrel. As a result, **Nelson also does not consider the present invention as a whole.**

Callies generally discloses a substitute barrel 33. In FIG. 1 the outermost end 36 about the substitute barrel 33 is threaded (not shown) to thread ably receive a tubular barrel fitting 37. This tubular barrel fitting 37 includes a tapered portion 40 that engages compatible tapered surfaces 41 at the end 15 of the original barrel 13 and forming the end of the original barrel bore 14 the engagement of the mating tapered fitting portion 40 and barrel surfaces 41 tending to center the substitute barrel 33 within the bore 14 of the original barrel 13. The **tubular barrel fitting 37 also includes a cylindrical portion 42 located outwardly of the original barrel 14 so as to facilitate threaded adjustment of the fitting 37 on the substitute barrel end** 36.

In order to attach the substitute barrel 33 of Callies, the cylinder 21 illustrated in FIG. 1 is removed so that when the substitute barrel 33 is

inserted into and through the original barrel 13, the tubular fittings 37 and 43 can be thread ably attached to the ends 36 and 44 respectively of the substitute barrel 33. **First, the tubular fitting 43 is threaded into place on the substitute barrel 33, and its flared end portion 45 is pressed inwardly against the bore surfaces 46. Then, the opposite tubular fitting 37 is threadably tightened, so that its tapered portion 40 tightly engages the mating tapered surfaces 41 of the original barrel bore 14.** The substitute barrel 33 is now secured in placed, and is substantially centered within the original barrel bore 14.

Therefore, **Callies teaches away from the use of a hollow circumferential step in the cap for insertion into the host barrel, as disclosed in the present invention. The presence of the tapered surfaces** between the tubular barrel fitting and the original barrel **precludes the hollow circumferential step as described by the present invention.** As shown in FIG. 1 the substitute barrel is threaded on both ends as it secures to the tubular fitting 43 inside and recessed from one end of the original barrel 13, and on the other end with tubular fitting 37 that engages the mating tapered surfaces 41of the original barrel bore 14. The substitute barrel 33 is secured inside the original barrel by pressing against the bore surfaces 46 on the breech side inside the barrel 13, and engaging the mating tapered surfaces 41 on the muzzle end.

In fact, Callies has **no motivation** to teach the hollow circumferential step in the cap of the present invention since the tapered tubular barrel fitting is already in place. The integrity of this type of tapered pressing contacts and mating surfaces against the shock and vibration force of firing is weak. **If tight contacts were not achieved or maintained at the tapered surfaces, the muzzle end of the substitute barrel is unconstrained**

and the aiming becomes compromised, the substitute barrel easily falls off the muzzle end and there is no means to restore the original contacts when the weapon is operated.

Knodes generally discloses in FIG. 9 an extractor member with one end that is provided with radially extended lugs 52 and 54 respectively. The extractor member is further characterized by a neck portion 56 of reduced width which provides oppositely disposed longitudinally extending notches 58 and 60. These notches cooperate with the spring metal clip 36 to provide adjustable stop means for varying the stroke of the extractor bar.

Knodes does not teach a shell extractor with an extractor coil spring that, in a **continuous and non-discrete** fashion, **varies the stroke of the shell extractor** as in the present invention. In addition, **Knodes teaches away from the shell extractor** with an extractor coil spring as in **the present invention** by describing a **discrete shell extractor** that could be turned around for varying the stroke of the extractor bar.

The **hypothetical combination of Nelson, Callies, and Knode** would produce a hypothetical adapter with multiple, connected segments that include a **cylindrical main body** that is inserted into the breech bore and a barrel which extends forwardly thereof into the gun barrel bore. The **adapter barrel would be releasably connected to the main body of the adapter by threads.** The muzzle end of the adaptor barrel **threadably** receives a tubular barrel fitting. This tubular barrel fitting includes a tapered portion that engages compatible tapered surfaces at the end of the original barrel and forming the end of the original barrel bore, the engagement of the mating tapered fitting portion and barrel surfaces

tending to center the substitute barrel within the bore of the original barrel. In addition a shell extractor member with one end that is provided with two radially extended lugs. The extractor member is further characterized by a neck portion of reduced width which provides oppositely disposed longitudinally extending notches. These notches cooperate with a spring metal clip to provide adjustable stop means for varying the stroke of the extractor bar.

In the operation of the **hypothetical combination of Nelson, Callies, and Knode**, the substitute barrel with multiple, connected segments is secured inside the original barrel by engaging the mating tapered surfaces on the muzzle end of the host barrel. Firm engagement of the mating tapered surfaces is required for the substitute barrel to be properly secured on the muzzle end, otherwise the muzzle end of the substitute o barrel is unconstrained and the aiming becomes compromised. However with the substitute barrel inserted into the breech end of the host barrel, a slight axial displacement of the substitute barrel would break this engagement of the mating tapered surfaces and loosen the substitute barrel a the muzzled end. This is inferior to the present invention where such slight axial displacement of the substitute barrel does not unconstrain the substitute barrel at the muzzle end.

Alternately, when the segments of the multiple, connected segments substitute barrel are firmly threaded such that the tapered mating surfaces are firmly engaged, the firing of a shell sets of stress waves down the barrels, the resulting strain transfers stress between the barrels across the tapered mating surfaces, increasing the axial load on the threads connecting the segments and potentially leading to earlier failure.

In the present invention the cap of the barrel insert is inserted into the host barrel via the circumferential step, and allows for slight axial displacement of the barrel insert inside the host barrel while maintaining constraint of the barrel insert at the muzzled end. The barrel insert is inserted through the breech end without any threads. Therefore the barrel insert of **the present invention is not subjected to the extra force loading on the threads during firing as experienced by the hypothetical combination of Nelson, Callies, and Knode**.

Further, in the shell extractor of the **hypothetical combination of Nelson, Callies and Knode**, notches cooperate with the spring metal clip **to provide adjustable stop means for varying the stroke of the extractor bar.** In contrast, the shell extractor of the **present invention has a spring that biases the shell extractor member towards the barrel** and does not require any special feature for varying the stroke of the shell extractor.

Consequently the hypothetical combination of Nelson, Callies, and Knode does not produce the same or similar product as the present invention, and claim 1 and the claims dependent thereon, including new claim 6, are not obvious in view of Nelson, Callies and Knode, whether considered individually or in combination with each other.

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NEW OATH ATTACHED

A new oath is hereby attached, as requested by the Examiner. No fee is believed required because the oath was correct at filing, and the filing receipt was granted to Applicants, only however a slight change in the new rules might call for a new oath, as was pointed out by the Examiner. So, a new oath is attached here.

CONCLUSION

All the claims presently on file in the present application are in condition for immediate allowance, and such action is respectfully requested. If it is felt for any reason that direct communication would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned at the below-listed telephone number.

Respectfully submitted,

Date: 3/7/2006

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